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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,342	12/12/2001	Hirohiko Nishiki	SLA 0454	6170

7590

06/11/2003

David C. Ripma
Patent Counsel
Sharp Laboratories of America, Inc.
5750 NW Pacific Rim Boulevard
Camas, WA 98607

EXAMINER

CHOWDHURY, TARIFUR RASHID

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 06/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

10/021,342

Applicant(s)

NISHIKI, HIROHIKO

Examiner

Tarifur R Chowdhury

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 9-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 18-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Claims 9-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 4.

Drawings

2. The informal drawings filed in this application are acceptable for examination purposes. When the application is allowed, applicant will be required to submit new formal drawings.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 24 and 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by applicant's admitted prior art (AAPA).**
6. The AAPA described and shown in the present application discloses (pages 5-7) and shows in Fig. 1a, in the fabrication of integrated circuit (IC) structures, a method for forming a structure resistant to ozone stripping, the method comprising:

- forming a first electrically conductive layer (Mo); and
- forming a metal layer (Al) overlying the electrically conductive layer (Mo).

Accordingly, claims 24 and 26 are anticipated.

As to claim 27, the AAPA described in the present application also discloses that the thickness of the Al is greater than 1000 Å.

As to claim 28, the AAPA described in the present application also discloses that the forming the metal layer (Al) overlying the electrically conductive layer includes forming an LCD reflector.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 25 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA as applied to claims 24 and 26-28 above.**

9. As to claim 25, the AAPA differs from the claimed invention because it does not disclose that the electrically conductive layer is made of a material selected from the group that includes Ti, Ta etc.

It is common and known that titanium has better etchant resistance than molybdenum (Mo). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to substitute the electrically conductive layer of

the AAPA with a layer that is made of titanium so that the structure provides better etchant resistance.

10. As to claim 29, using the metal layer that overlies the ozone resistant barrier as the top metal layer for a bus line is considered as intended use and thus would have been obvious.

11. Claims 1-8 and 18-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (AAPA) in view of Murakami et al., (Murakami), USPAT 5,808,315.

12. The AAPA described in the present application discloses (pages 5-7) and shows in Fig. 1a, a liquid crystal display (LCD) reflector structure or an integrated circuit (IC) having such a structure resistant to ozone stripping, the reflector structure comprising:

- a first electrically conductive layer (ITO);
- a barrier layer such as Mo overlying the first electrically conductive layer (ITO); and
- a metal layer such as Al overlaying the barrier layer.

The AAPA described in the present application differs from the claimed invention because it does not explicitly disclose that the barrier layer is a material selected from the group including Ti, Ta, TiN, TaN, Al, Al compounds, tungsten, chrome, and copper and thus ozone resistant.

Murakami discloses a liquid crystal display device. Murakami also discloses that an electrode structure comprising an ITO layer, a chromium or titanium nitride layer and an Al layer, stacked in this order. Murakami also discloses that such a structure is

advantageous since chromium and titanium nitride provides good contact with ITO (col. 3, lines 9-16).

Murakami is evidence that ordinary workers in the art would find a reason, suggestion or motivation to use an ozone resistant layer such as TiN or chromium.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the reflector structure of the AAPA by substituting the Mo barrier layer with an ozone resistant layer made of TiN or chromium to provide good contact with ITO, as per the teachings of Murakami.

Accordingly, claims 1-4, 6, 8 and 18-23 would have been obvious.

As to claim 5, the AAPA described in the present application also discloses that the thickness of the Al is greater than 1000 Å.

As to claim 7, using the metal layer that overlies the ozone resistant barrier as the top metal layer for a bus line is considered as intended use and thus would have been obvious.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) JP 03-072318 is related to an active matrix liquid crystal display wherein the gate line is formed a first wiring made of metals such as Al and the second wiring is made of metals such as Ta.

b) US 5,903,326 is related to a liquid crystal display wherein the gate electrode is

made of three layer such as aluminum, tantalum and tantalum oxide stacked in that order.

c) US 2001/0030717 is related to a liquid crystal display device wherein the counter electrode is made of a stacked structure film in which a layer made of aluminum or an alloy essentially containing aluminum is covered with a high-melting point metal and a transparent conductive film covers the stacked structure.

d) USPAT 6,480,250 is related to a low-reflection transparent conductive multi layer film having at least one transparent protective layers.

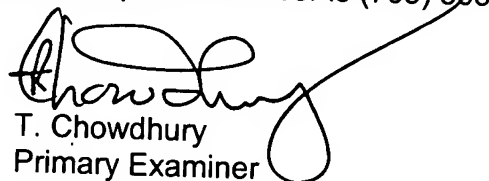
e) USPAT 5,990,995 is related to a reflection type liquid crystal display.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tarifur R Chowdhury whose telephone number is (703) 308-4115. The examiner can normally be reached on M-Th (6:30-5:00) Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William L Sikes can be reached on (703) 305-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7005 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

TRC
June 5, 2003


T. Chowdhury
Primary Examiner
Technology Center 2800